

10/731,095

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data from INPADOCC
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NEWS 8 MAR 03 REGISTRY/ZREGISTRY - Sequence annotations enhanced
NEWS 9 MAR 03 MEDLINE file segment of TOXCENTER reloaded
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NEWS 11 MAR 22 Original IDE display format returns to REGISTRY/ZREGISTRY
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```
=> s "zirconium dioxide"
    188848 "ZIRCONIUM"
      21 "ZIRCONIUMS"
    188851 "ZIRCONIUM"
        ("ZIRCONIUM" OR "ZIRCONIUMS")
    430082 "DIOXIDE"
      6427 "DIOXIDES"
    431704 "DIOXIDE"
        ("DIOXIDE" OR "DIOXIDES")
L1      8067 "ZIRCONIUM DIOXIDE"
        ("ZIRCONIUM" (W) "DIOXIDE")
```

```
=> s monoclinic
    83858 MONOCLINIC
      4 MONOCLINICS
    83861 MONOCLINIC
        (MONOCLINIC OR MONOCLINICS)
    128 MONOCLIN
L2      83981 MONOCLINIC
        (MONOCLINIC OR MONOCLIN)
```

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=> s tetragonal
    49811 TETRAGONAL
      7 TETRAGONALS
L3      49814 TETRAGONAL
        (TETRAGONAL OR TETRAGONALS)
```

```
=> s cubic
    91488 CUBIC
      22 CUBICS
```

L4 91495 CUBIC
 (CUBIC OR CUBICS)

 => s 12 or 13 or 14
 L5 207185 L2 OR L3 OR L4

 => s 15 and 11
 L6 1136 L5 AND L1

 => s catalyst
 686111 CATALYST
 689841 CATALYSTS
 L7 879567 CATALYST
 (CATALYST OR CATALYSTS)

 => s 15 and 17
 L8 2986 L5 AND L7

 => s 16 and 17
 L9 41 L6 AND L7

 => d 19 1-41 abs ibib

L9 ANSWER 1 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB The present work has its basis on the system zirconia-sulfonate in order to study the influence in the variation of the content of the sulfonium ion, carrying out the addition of the agent in situ at a pH=1.8. Results show that solids with a tetragonal type phase, and a distribution of acid sites of order of $H_0 = -14.52$ were obtained.

ACCESSION NUMBER: 2004:752868 CAPLUS
 DOCUMENT NUMBER: 141:231295
 TITLE: Characterization of acidic properties of zirconium dioxide sulfate (ZrO_2-SO_4)
 AUTHOR(S): Sandoval-Flores, G.; Silva-Rodrigo, R.; Dominguez-Esquivel, J. M.; Ramirez, M. T.
 CORPORATE SOURCE: Inst. Tecnológico de Cd. Madero, División de Estudios de Posgrado e Investigación, Los Mangos, 89440, Mex.
 SOURCE: Revista Mexicana de Ingeniería Química (2004), 3(2), 177-180
 CODEN: RMIQRM; ISSN: 1665-2738
 PUBLISHER: Academia Mexicana de Investigación y Docencia en Ingeniería Química, A.C.
 DOCUMENT TYPE: Journal
 LANGUAGE: Spanish
 REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 2 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Gallium-promoted sulfated zirconia (GSZ) catalysts were prepared by impregnation of zirconium hydroxide with aqueous $Ga_2(SO_4)_3$ followed by calcination. Isomerization of n-hexane was studied over GSZ at 150°, 2.0 MP, WHSV 2 and H₂/hexane (molar) ratio of 5. In comparison to sulfated zirconia (SZ), the conversion of n-hexane over Gallium-promoted sulfated zirconia (GSZ) was greatly improved and it remained stable at 85%. In particular, almost all the products were isomers of hexane and the selectivity of 2,2-DMB reached 20%. The results of characterization indicated that the addition of gallium onto SZ catalyst showed little difference in acid strength between SZ and GSZ catalysts while the redox properties of the SZ catalyst changed with addition of gallium. The transformation of SZ crystalline from metastable tetragonal phase, the more active phase, to monoclinic phase was retarded with the addition of gallium. Also, the simultaneous promotion of Pt and Ga brings the production distribution very close to the equilibrium one.

ACCESSION NUMBER: 2003:741614 CAPLUS
 DOCUMENT NUMBER: 140:61930
 TITLE: Hydroisomerization of n-hexane over gallium-promoted sulfated zirconia
 AUTHOR(S): Cao, Chong-jiang; Han, Song; Chen, Chang-Lin; Xu, Nan-Feng; Hou, Chun-Yuan
 CORPORATE SOURCE: College of Chemistry and Chemical Engineering, Nanjing University of Technology, Nanjing, 210009, Peop. Rep. China
 SOURCE: Catalysis Communications (2003), 4(10), 511-515
 CODEN: CCAOAC; ISSN: 1566-7367
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 3 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Colloidal crystal templates were used to synthesize three-dimensionally ordered macroporous sulfated zirconia catalysts with pore diam. of .apprx.300 nm and less. Ordered arrays of uniformly sized poly(Me methacrylate) latex spheres were infiltrated with clear precursor solns. containing varying SO_4/Zr molar ratios. After solidification of the material in the void space between the spheres, the polymer templates were removed by calcination at various temps., producing crystalline sulfated zirconia replicas of the template arrays. The effects of changing sulfate content and calcination temperature on the physicochem. properties of the material (including shrinkage, grain size, surface area, and composition) were systematically studied. The presence of sulfate retarded the crystallization and crystal growth, which enabled greater control of macropore shrinkage and periodic order of the material. The combination of crystal growth inhibition and the inherent porosity of the PMMA latex are believed to be the major factors contributing to the observed BET surface areas of the materials, which were significantly larger than those of their nontemplated counterparts and passed through a maximum as a function of calcination temperature and initial SO_4/Zr ratio. The maximum value of 123 m^2/g was attained by a sample with $SO_4/Zr = 2$, calcined at 650°, with a sulfate surface coverage of 3.1 nm². The n-butane isomerization activity of the material also passed through a maximum as a function of calcination temperature and initial SO_4/Zr ratio, reaching its maximum value for a sample with $SO_4/Zr = 2$, calcined at 600°.

ACCESSION NUMBER: 2003:382239 CAPLUS
 DOCUMENT NUMBER: 139:103303
 TITLE: Preparation and Catalytic Evaluation of Macroporous Crystalline Sulfated Zirconium Dioxide Templated with Colloidal Crystals
 AUTHOR(S): Al-Daous, Mohammed A.; Stein, Andreas
 CORPORATE SOURCE: Department of Chemistry, University of Minnesota, Minneapolis, MN, 55455, USA
 SOURCE: Chemistry of Materials (2003), 15(13), 2638-2645
 CODEN: CHATEX; ISSN: 0897-4756
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 4 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB The invention relates to removal of nitrogen oxides from both dry and wet as well as sulfur-containing emission gases by C2-16-hydrocarbons under oxidation conditions. The catalyst and process are applicable for treating gases containing nitrogen oxides, including flue gases of heat-and-power plants, motor car exhaust gases, and nitric acid production residual gases. The catalyst includes two catalytic components. The first one is n Mel=Me2O+P SOx/carrier 1, where Mel is silver, platinum, palladium, or their mixture; Me2O is cuprous or cobaltous oxide, or their mixture; SOx is adsorbed sulfur oxide (sulfuric acid decomposition product) or sulfite, or sulfate containing ammonium salts, n is ≤ 3.0 , m is ≤ 6.0 , and is ≤ 2.0 (on conversion to sulfur), whereas carrier 1 constitutes columnar-structure clay containing, as columns, 15-30% of zirconium oxide-based nanoparticles of the formula: $x Me_3O/ZrO_2$, in which Me3O is aluminum oxide, iron oxide, cerium oxide, or copper oxide, or their mixture ($x = 0-4.0$), or 15-20% of aluminum oxide with interlayer distance not exceeding total volume of meso- and micropores no larger than 0.25 cm^2/g and sp. surface 200-370 m^2/g . The second catalytic component is nMel=Me2O/carrier 2, where Mel is silver, platinum, or their mixture; Me2O is cuprous, cobaltous, or nickel oxide, or their mixture, n is ≤ 2.0 , m is ≤ 6.0 , whereas carrier 1 constitutes low-temperature cubic zirconium dioxide modification stabilized by at least 1.0% calcium, strontium, or barium oxide, or their mixture with sp. surface at least 160 m^2/g . Two alternative processes for treatment of emission gases using the catalyst are described, the two processes being effected either in single reactor or in two in-series connected reactors at 150° to 550° in oxidative atmospheric, where C2-16-hydrocarbons function as reducing agents.

ACCESSION NUMBER: 2003:312784 CAPLUS
 DOCUMENT NUMBER: 139:25766
 TITLE: Catalyst and method for removing nitrogen oxides from emission gases
 INVENTOR(S): Kuznetsova, T. G.; Sadykov, V. A.; Sorokina, T. P.; Doronin, V. P.; Alikina, G. M.; Bunina, R. V.; Ivanova, A. S.; Matyshev, V. A.; Konin, G. A.; Rozovskii, A. Ya.; Burdeinaya, T. N.; Tret'yakov, V. F.; Ross, Julian
 PATENT ASSIGNEE(S): Institut Kataliza im. G. K. Borezkova SO RAN, Russia
 SOURCE: Russ., No pp. given
 CODEN: RUKKE7
 DOCUMENT TYPE: Patent
 LANGUAGE: Russian
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RU 2194573	C1	20021220	RU 2001-125453	20010917
PRIORITY APPLN. INFO.:			RU 2001-125453	20010917

L9 ANSWER 5 OF 41 CAPLUS COPYRIGHT 2005 ACS ON STN
 AB Catalysts active in the isomerization of n-butane have been synthesized by depositing sulfate ions on well-crystallized defective cubic structures based on ZrO₂. This technique for introduction of sulfates does not result in any significant changes in the bulk properties of zirconium dioxide matrix. Active sulfated catalysts were prepared on the basis of cubic solid solns. of ZrO₂ with calcium oxide and on the basis of cubic anion-doped ZrO₂. The dependence of the catalytic activity on the amount of calcium appeared to have a maximum corresponding to 10 mol.% Ca. Radical cations formed after adsorption of chlorobenzene on activated catalysts have been used as spin probes for detection of strong acceptor sites on the surface of the catalysts and estimation of their concentration. A good correlation has been observed between the presence of such sites on a catalyst surface and its activity in isomerization of n-butane.

ACCESSION NUMBER: 2003:7050 CAPLUS
 DOCUMENT NUMBER: 138:289971
 TITLE: New approach to preparation and investigation of active sites in sulfated zirconia catalysts for skeletal isomerization of alkanes
 AUTHOR(S): Pakhomov, M. A.; Ivanova, A. S.; Bedilo, A. F.; Moroz, E. M.; Volodin, A. M.
 CORPORATE SOURCE: Borekov Institute of Catalysis, Novosibirsk, 630090, Russia
 SOURCE: Studies in Surface Science and Catalysis (2002), 143(Scientific Bases for the Preparation of Heterogeneous Catalysts), 353-360
 CODEN: SSCTDH; ISSN: 0167-2991
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 6 OF 41 CAPLUS COPYRIGHT 2005 ACS ON STN
 AB The catalyst comprises ≥ 1 of Pd, Pt, and Rh, heat-resistant inorg. oxides such as alumina, titania, zirconia, or silica, a catalyst active component made of ZrO₂ containing CeO₂ and ≥ 1 oxides of Y, Ti, Cr, Mn, Fe, Co, Ni, Cu, Zn, Sn and In, and alkaline earth metal oxides. The ZrO₂ containing the additives has a tetragonal single crystal structure, an excellent oxygen storage capacity, and absorption/desorption functions at 400-500°. The catalyst is suitable for removing NO_x, CO, and hydrocarbons from exhaust at relatively low temps.

ACCESSION NUMBER: 2002:894873 CAPLUS
 DOCUMENT NUMBER: 137:388461
 TITLE: Exhaust treatment catalyst suitable for use at low temperature
 INVENTOR(S): Taniguchi, Shigeyoshi; Horiuchi, Makoto
 PATENT ASSIGNEE(S): ICT K. K., Japan; International Catalyst Technology, Inc.
 SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.
 CODEN: JKKKAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002336703	A2	20021126	JP 2001-143487	20010514

PRIORITY APPLN. INFO.: JP 2001-143487 20010514

L9 ANSWER 7 OF 41 CAPLUS COPYRIGHT 2005 ACS ON STN
 AB ZrO₂-supported La,Mn oxide catalysts with different La and Mn loadings (0.7, 2, 4, 6, 12, and 16 wt% as LaMnO₃) were prepared by impregnation of tetragonal ZrO₂ with equimolar amts. of La and Mn citrate precursors and calcination at 1073 K. The catalysts were characterized by x-ray diffraction (XRD), x-ray absorption spectroscopy (XAS), and BET sp. surface area determination. The redox properties were tested by temperature-programmed reduction (TPR), and the catalytic tests were carried out for methane combustion at 650-1050 K and for CO oxidation at 350-800 K. XRD revealed the presence of tetragonal zirconia with traces of the monoclinic phase. LaMnO₃ perovskite was also detected for loading higher than 6%. XAS and TPR expts. suggested that at high loading, small crystallites of LaMnO₃ were formed but were not uniformly spread on the zirconia surface; on the other hand, at low loading, La and Mn oxide species interacted with the support and were difficult to be structurally defined. The catalysis study indicated that the presence of a perovskite-like structure is necessary for the development of highly active sites. Dilute catalysts were in fact poorly active even when considering the activity per g of La and Mn perovskite-like composition. For methane combustion and CO oxidation, similar trends of the activity as a function of the loading point to a similarity of the active sites for the two reactions on the examined catalytic system. (c) 2002 Academic Press.

ACCESSION NUMBER: 2002:97818 CAPLUS
 DOCUMENT NUMBER: 136:312152
 TITLE: Methane Combustion and CO Oxidation on Zirconia-Supported La,Mn Oxides and LaMnO₃ Perovskite
 AUTHOR(S): Cimino, S.; Colonna, S.; De Rossi, S.; Faticanti, M.; Lisi, L.; Pettiti, I.; Porta, P.
 CORPORATE SOURCE: Dipartimento d'Ingegneria Chimica, Universita "Federico II", Naples, Italy
 SOURCE: Journal of Catalysis (2002), 205(2), 309-317
 CODEN: JCTLA5; ISSN: 0021-9517
 PUBLISHER: Academic Press
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 8 OF 41 CAPLUS COPYRIGHT 2005 ACS ON STN
 AB The title catalyst was prepared by adsorption-precipitation and NH₃-TPD was used to measure the acidity of SO₄2--ZrO₂/γ-Al₂O₃. The structure of the catalyst was characterized by IR and x-ray diffraction, the sp. surface area of catalysts was measured by BET method. The effects of preparation factors on acid site structure, acidity and catalytic activity of catalysts were studied. The results showed that the acid strength of catalysts reached the level of superacid after treated with 0.8 mol/L H₂SO₄ and then calcined at 1043 K, ZrO₂ usually existed in tetragonal phase, the sulfur atom anchored to oxide surface through one S-O linkage, the sp. surface area of catalysts was generally greater than 100 m²/g.

ACCESSION NUMBER: 2001:568931 CAPLUS
 DOCUMENT NUMBER: 135:294468
 TITLE: Supported SO₄2--ZrO₂/γ-Al₂O₃ catalyst for hexane isomerization
 AUTHOR(S): Zhang, Jun-she; Zhang, Ji-yan; Wang, Ri-jie; Wang, Yan-ji
 CORPORATE SOURCE: School of Chemical Engineering, Tianjin University, Tianjin, 300072, Peop. Rep. China
 SOURCE: Shiyou Xuebao, Shiyou Jigong (2001), 17(Suppl.), 79-84
 CODEN: SXSHY; ISSN: 1001-8719
 PUBLISHER: Zhongguo Shihua Chubanshe
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

19 ANSWER 9 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Zirconia-loaded alumina samples were prepared and used as supports for platinum and tin metallic phases. X-ray diffraction patterns of 9.0 and 13.0 wt % ZrO₂-loaded alumina samples showed the characteristic lines of the tetragonal ZrO₂ phase. For the base alumina and these two supports, the nitrogen adsorption-desorption isotherms displayed type IV isotherms and a type H1 hysteresis loop characteristic of mesoporous materials, with BET areas and pore vols. decreasing with increasing ZrO₂ content. Platinum and tin were incorporated into these substrates and then characterized by temperature-programmed reduction, XPS, and their performance in regard to n-butane dehydrogenation. The TPR profiles of the bimetallic systems revealed that platinum is readily reduced whereas tin reduction depends on the support, the metal loading, the preparation method, and the pretreatment conditions. Upon hydrogenation up to 773 K, tin undergoes partial reduction to the metal and the SnO/Sn₂O₃ ratio increases with increasing ZrO₂ content. All these systems were highly selective toward olefins (i.e., n-butenes), with a minor contribution of the isomerization and cracking reactions. The catalysts became deactivated by coke deposition, although this deactivation was less marked in the Pt-Sn deposited on the ZrO₂-Al₂O₃ substrates.

ACCESSION NUMBER: 2000:839508 CAPLUS
 DOCUMENT NUMBER: 134:133906
 TITLE: Alumina- and Zirconia-Alumina-Loaded Tin-Platinum. Surface Features and Performance for Butane Dehydrogenation
 AUTHOR(S): Larese, C.; Campos-Martin, J. M.; Fierro, J. L. G.
 CORPORATE SOURCE: Inst. Catalisís Petroleoquímica, CSIC, Madrid, 28049, Spain
 SOURCE: Langmuir (2000), 16(26), 10294-10300
 CODEN: LANGU5; ISSN: 0743-7463
 PUBLISHER: American Chemical Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

19 ANSWER 10 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB A series of M-WO₃/ZrO₂ (WMZ) solid strong acid catalyst samples with transition metal (M = Pt, Cu, Mn, Fe, Co, Ni) were prepared, and their crystal structure, surface state and acid amount were determined by XRD, TG-DTA, H₂-TPR and NH₃-TPD. The results showed that ZrO₂ in the samples mainly existed in tetragonal phase, but its content varied with different transition metals. The sp. surface area of WMZ decreased compared with WZ. The surface state of WO₃ dispersed in monolayer changed only in WPTZ sample. The alkylation of isobutane with butene was studied, and the reactivity was related with the measured surface acid sites, the butene conversion over WMZ declined but the selectivity for i-C₈ increased compared with that over WZ. Based on the reaction mechanism, it was elucidated that the addition of transition metal had scarcely any effect on the catalytic performance.

ACCESSION NUMBER: 2000:523239 CAPLUS
 DOCUMENT NUMBER: 133:194890
 TITLE: Study on alkylation of isobutane with butene over WO₃/ZrO₂ strong solid acid. II. Promotion effect of transition metal
 AUTHOR(S): Sun, Wendong; Zhao, Zhenbo; Wu, Yue
 CORPORATE SOURCE: Changchun Institute of Applied Chemistry, The Chinese Academy of Sciences, Changchun, 130022, Peop. Rep. China
 SOURCE: Cuihua Xuebao (2000), 21(3), 229-233
 CODEN: THHPD3; ISSN: 0253-9837
 PUBLISHER: Kexue Chubanshe
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

19 ANSWER 11 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB A series of WO₃/ZrO₂, SO₄^2-/ZrO₂, and MoO₃/ZrO₂ strong solid acids was prepared. Their crystal structure, surface state and acidity were determined by XRD, TG-DTA, H₂-temperature-programmed reaction, and NH₃-temperature-programmed desorption. The results revealed that superfine ZrO₂ mainly exists in tetragonal phase, however, the amount of T-phase ZrO₂ decreases, but it has a larger specific area, acid amts. and loading capacity as compared with catalyst prepared by traditional approach using Zr(OH)₄ as carrier. Acid strength of the catalyst increases with the calcination temperature, which indicates that its surface state has changed significantly. The isobutane alkylation of n-butene catalyzed by various catalysts has been investigated. Exptl. results indicated that better olefin conversions are reached compared to that over catalyst prepared by traditional Zr(OH)₄ as carriers. C₈ selectivity decreases due to the formation of more cracking products of C₅ approx C₇.

ACCESSION NUMBER: 2000:318411 CAPLUS
 DOCUMENT NUMBER: 133:75608
 TITLE: Study of the alkylation of isobutane with n-butenes over WO₃/ZrO₂ strong solid acid. III. Effect of superfine ZrO₂ support on physico-chemical properties and catalytic behavior of the catalyst
 AUTHOR(S): Sun, Wen-dong; Zhao, Zhen-bo; Liu, Yu; Wu, Yue
 CORPORATE SOURCE: Changchun Institute of Applied Chemistry, The Chinese Academy of Sciences, Changchun, 130022, Peop. Rep. China
 SOURCE: Fenzi Cuihua (2000), 14(2), 111-118
 CODEN: FECUEN; ISSN: 1001-3555
 PUBLISHER: Kexue Chubanshe
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

19 ANSWER 12 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB A series of WO₃/ZrO₂ strong solid acids, prepared under different conditions, were examined (e.g., for crystal structures and surface properties and acidities) by H₂ temperature-programmed reduction, laser Raman spectroscopy, and acidity measurements. Although ZrO₂ in WO₃/ZrO₂ existed mainly in the tetragonal phase, WO₃ played an important role in the stabilization of the ZrO₂ tetragonal phase; thus, the catalyst had a considerable surface area. WO₃ in WO₃/ZrO₂ was dispersed and crystallized in WO₃ crystallites on the ZrO₂ surface and partly reacted with ZrO₂ to form the Zr-O-W bond, which acted as the strong solid acid site. The catalytic properties of WO₃/ZrO₂ strong solid acids were investigated for the alkylation of isobutane with butene. The catalysts had a better reaction performance than other strong solid acids; a parallel relationship could be drawn between the catalytic activity and the distribution of acid sites as well as the acidic strength of the catalysts.

ACCESSION NUMBER: 2000:218753 CAPLUS
 DOCUMENT NUMBER: 132:310544
 TITLE: Studies on the alkylation of isobutane with butene over WO₃/ZrO₂ strong solid acid. (I) Effect of preparation, load of WO₃ and calcination temperature
 AUTHOR(S): Sun, Wen-Dong; Zhao, Zhen-Bo; Chu, Wen-Ling; Guo, Chuan; Ye, Xing-Kai; Wu, Yue
 CORPORATE SOURCE: Changchun Institute of Applied Chemistry, The Chinese Academy of Sciences, Changchun, 130022, Peop. Rep. China
 SOURCE: Gaodeng Xuexiao Huaxue Xuebao (2000), 21(3), 448-452
 CODEN: KTHPDM; ISSN: 0251-0790
 PUBLISHER: Gaodeng Jiaoyu Chubanshe
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L9 ANSWER 13 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Mox/ZrO2 catalysts were prepared by impregnation method. Their structure, reduction and oxidation properties were studied with XRD, temperature-programmed reaction, temperature-programmed oxidation and microreaction technique of CO oxidation. There was strong interaction between M (transition metal) and ZrO2, which restrains the growth of fine particles of zirconium oxide and phase transformation of tetragonal-ZrO2 to mixed-ZrO2. Different transition metal oxides on ZrO2 have different reduction and oxidation properties. The oxidation activity order of the catalysts is CuOx > CoOx > MnOx > FeOx > NiOx > CrOx.
 ACCESSION NUMBER: 1999:643161 CAPLUS
 DOCUMENT NUMBER: 131:338563
 TITLE: Structure and properties of ZrO2-supported transition metal oxide catalysts
 AUTHOR(S): Wang, Yue-Juan; Zhou, Ren-Xian; Jiang, Xiao-Yuan; Zheng, Xiao-Ming
 CORPORATE SOURCE: Department of Chemistry, Zhejiang Normal University, Jinhua, 321004, Peop. Rep. China
 SOURCE: Shiyou Huagong (1999), 28(9), 588-592
 CODEN: SHHUE9; ISSN: 1000-8144
 PUBLISHER: Shiyou Huagong Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L9 ANSWER 14 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB The formation of SO42-/ZrO2 solid superacid is studied with FT-IR, XRD and SEM techniques. Subtractive FT-IR measurement indicates the existence of chemical bonds between ZrO2 and H2SO4; XRD determination reveals that the strength of SO42-/ZrO2 superacid strongly depends on temperature of calcination and reaches a maximum as the ZrO2 transforms into tetragonal crystal phase. SEM anal. shows that the morphol. of ZrO2 surface is changed due to treatment of H2SO4. This catalyst shows higher esterification activity for synthesis of di-Bu maleate which is excellently related with the results of surface anal.
 ACCESSION NUMBER: 1999:332708 CAPLUS
 DOCUMENT NUMBER: 131:145994
 TITLE: Studies on the formation mechanism of SO42- / ZrO2 solid superacid
 AUTHOR(S): Zhang, Yunhui; Xu, Yi; Chen, Changgou; Ou, Zhongwen
 CORPORATE SOURCE: College of Chem. Chem. Engineering, Chongqing University, 40044, Peop. Rep. China
 SOURCE: Chongqing Daxue Xuebao, Ziran Kexueban (1999), 22(1), 77-81
 CODEN: CDXZF2; ISSN: 1000-582X
 PUBLISHER: Chongqing Daxue Xuebao Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L9 ANSWER 15 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB The activity and durability of the catalysts prepared by the oxidation-reduction treatment of amorphous Co-15 atomic% Zr, Ni-40 atomic% Zr, and Ni-30 atomic% Zr-10 atomic% Sm alloys were investigated for simultaneous methanation of carbon monoxide and carbon dioxide. The Ni-30Zr-10Sm catalyst showed the highest activity among the catalysts examined; the activity of the Co-15Zr catalyst is lower than those of the nickel-based catalysts, in agreement with the activity for the sole methanation of carbon dioxide. On all the catalysts, carbon monoxide reacts preferentially with hydrogen and is completely converted into methane at 2523 K. The remaining hydrogen further reacts with carbon dioxide to form methane. The methanation rate in the H2-CO-CO2 mixed gas was higher than that in H2-CO mixed gas without CO2. This is probably related to the prevention of the formation of surface carbon by disproportionation of carbon monoxide due to the presence of carbon dioxide. The activity of the Ni-40Zr catalyst at 573 K gradually decreased with reaction time. Tetragonal ZrO2, the presence of which is responsible for the high activity, is transformed to thermodynamically more stable monoclinic ZrO2 during the reaction. In contrast to the Ni-40Zr catalyst, the Ni-30Zr-10Sm catalyst sustains the initial high activity, and no structural changes were observed during the durability test regardless of the presence of a small amount of H2S.
 ACCESSION NUMBER: 1998:571532 CAPLUS
 DOCUMENT NUMBER: 129:262645
 TITLE: Co-methanation of carbon monoxide and carbon dioxide on supported nickel and cobalt catalysts prepared from amorphous alloys
 AUTHOR(S): Habazaki, Hiroki; Yamasaki, Michiaki; Zhang, Bo-Ping; Kawashima, Asahi; Kohno, Shunpei; Takai, Takuro; Hashimoto, Koji
 CORPORATE SOURCE: Institute for Materials Research, Tohoku University, Sendai, 980-8577, Japan
 SOURCE: Applied Catalysis, A: General (1998), 172(1), 131-140
 CODEN: ACAGE4; ISSN: 0926-860X
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 16 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB ZrO2, which is 280 weight% monoclinic and has a surface area of 2100 m2/g, is produced by reaction of aqueous Zr salt solns. with NH3, aging to convert a tetragonal phase to a monoclinic phase at 0-300°, drying, and calcining at 200-600°. The product is suitable as a catalyst or catalyst support, especially for hydrogenation, dehydrogenation, Fischer-Tropsch syntheses, desulfurization, isomerization, polymerization, and steam reforming.
 ACCESSION NUMBER: 1998:410662 CAPLUS
 DOCUMENT NUMBER: 129:97316
 TITLE: Monoclinic zirconium dioxide with high surface area
 INVENTOR(S): Wulff-Doring, Joachim; Stichert, Wolfram; Schuth, Ferdi
 PATENT ASSIGNEE(S): BASF A.-G., Germany
 SOURCE: Eur. Pat. Appl., 9 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 849224	A1	19980624	EP 1997-122267	19971217
EP 849224	B1	20010613		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
DE 19653629	A1	19980625	DE 1996-19653629	19961220
US 6034029	A	20000307	US 1997-992569	19971217
ES 2159804	T3	20011016	ES 1997-122267	19971217
CN 1195037	A	19981007	CN 1997-107288	19971219
JP 10330116	A2	19981215	JP 1997-352888	19971222
PRIORITY APPLM. INFO.:			DE 1996-19653629	A 19961220
REFERENCE COUNT:	6		THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT	

L9 ANSWER 17 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Pure monoclinic and tetragonal zirconium dioxides were successfully prepared at pH values of .apprx.9.5 and 211.5, rep. Their crystal structures were characterized by x-ray diffraction. Calcination temperature has a great influence upon crystals.

When calcination temperature varied from 350° to 500°, amorphous ZrO₂ converted to crystal phase and the amount of monoclinic phase increased, while that of tetragonal phase decreased. Different crystal phases have different catalytic performance. Monoclinic ZrO₂ catalyst has a higher selectivity for isobutene in F-T synthesis, while the amount of isobutene was reduced over tetragonal ZrO₂. Catalytic properties of ZrO₂ prepared by using supercrit. fluid drying method is better than those by other methods. Reaction mechanisms are discussed.

ACCESSION NUMBER: 1997:624568 CAPLUS
 DOCUMENT NUMBER: 127:263082
 TITLE: Isobutene formation from synthesis gas over zirconium dioxide
 AUTHOR(S): Wang, Guojun; Su, Guiqin; Yin, Yuanqi
 CORPORATE SOURCE: Chinese Academy Sciences, Lanzhou Inst. Chemical Physics, Lanzhou, 730000, Peop. Rep. China
 SOURCE: Fenzhi Cuihua (1997), 11(4), 278-282
 CODEN: FECHUE; ISSN: 1001-3555
 PUBLISHER: Zhongguo Kexueyuan Lanzhou Huaxue Wuli Yanjiusuo
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L9 ANSWER 18 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB The activities of SO₄2--MoO₃-ZrO₂ catalysts for esterification of n-butanol with acetic acid are measured and compared with those of SO₄2--ZrO₂ and MoO₃-ZrO₂ catalysts. The catalyst structure was studied by XRD. SO₄2--MoO₃-ZrO₂ catalysts showed the highest catalytic activity. The tetragonal crystal system of ZrO₂ predominates in SO₄2--MoO₃-ZrO₂ system and the catalytic activities were prominently affected by calcination temperature and MoO₃ content.

ACCESSION NUMBER: 1996:733431 CAPLUS
 DOCUMENT NUMBER: 126:9452
 TITLE: Catalytic esterification properties of SO₄2--MoO₃-ZrO₂ catalysts
 AUTHOR(S): Huang, Bichun; Huang, Zhongtao
 CORPORATE SOURCE: Dep. Chemical Eng., South China Univ. Technol., Canton, 510641, Peop. Rep. China
 SOURCE: Shiyou Huagong (1996), 25(11), 765-768
 CODEN: SHHUE8; ISSN: 1000-8144
 PUBLISHER: Beijing Huagong Yanjiuyuan
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L9 ANSWER 19 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Methods were explored to synthesize sulfated mesoporous zirconia with crystalline pore walls of tetragonal crystal structure. The material has been characterized by small and large angle X-ray diffraction, nitrogen physisorption, transmission electron microscopy (TEM) and catalytic tests using n-butane isomerization to iso-butane and alkylation of 1-naphthol with 4-tert-butylstyrene as probe reactions. It has been found that sulfate deposition is crucial for the transformation of a mesoporous precursor with amorphous pore walls into a material with crystalline pore walls maintaining the mesoporous morphol. with narrow pore size distributions. TEM shows no ordered stacking of the pores. As a catalyst for acid catalyzed reactions of large mols., mesoporous sulfated zirconia is superior to microporous sulfated zirconia.

ACCESSION NUMBER: 1996:723870 CAPLUS
 DOCUMENT NUMBER: 126:91008
 TITLE: Preparation and catalytic testing of mesoporous sulfated zirconium dioxide with partially tetragonal wall structure
 AUTHOR(S): Huang, Yin-Yan; McCarthy, Timothy J.; Sachtler, Wolfgang M. H.
 CORPORATE SOURCE: V.N. Ipatieff Laboratory, Center for Catalysis and Surface Science, Department of Chemistry, Northwestern University, 2137 Sheridan Road, Evanston, IL, 60208, USA
 SOURCE: Applied Catalysis, A: General (1996), 148(1), 135-154
 CODEN: ACAGE4; ISSN: 0926-860X
 PUBLISHER: Elsevier
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 REFERENCE COUNT: 41 THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L9 ANSWER 20 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Monoclinic, square and cubic systems of zirconium dioxide crystals were prepared, and their catalytic performance for producing lower carbon olefins from syngas was tested. A correlation of the crystal systems of ZrO₂ with their catalytic performance was revealed: the monoclinic system crystals favored the formation of iso-butane, and the cubic and/or square system crystals contributed to the formation of ethylene almost without the formation of C₄ olefins.

ACCESSION NUMBER: 1995:809446 CAPLUS
 DOCUMENT NUMBER: 123:209786
 TITLE: Preparation of three systems of ZrO₂ crystals, and their catalytic performance
 AUTHOR(S): Li, Wen; Zhang, Wenzhong; Yin, Yuanqi
 CORPORATE SOURCE: Lanzhou Res. Inst. Chem. Physics, Academia Sinica, Lanzhou, 730001, Peop. Rep. China
 SOURCE: Tianranqi Huagong (1995), 20(2), 28-30
 CODEN: THTKEF; ISSN: 1001-9219
 PUBLISHER: Tianranqi Huagong Bianjibu
 DOCUMENT TYPE: Journal
 LANGUAGE: Chinese

L9 ANSWER 21 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Supported Mo oxide/ZrO₂ catalysts were prepared by simultaneous reaction of Zr oxychloride and ammonium heptamolybdate in molten K-Na nitrate eutectic at 773 K. Zr(IV) and Mo(VI) salts react in the molten nitrate medium, leading to solids of high sp. surface areas (<200 m²/g), which consist of small crystallites of tetragonal ZrO₂ containing surface polymolybdates. Textural properties of the catalysts and their stability upon air calcination were studied as a function of initial Mo/Zr ratio in the reaction mixture. Surface polymolybdate species stabilize tetragonal zirconia and improve the textural properties of the system. Surface areas twice those obtained by conventional methods were observed. Catalytic activity of samples was studied by thiophene hydrodesulfurization. Due to the enhanced surface area, Mo loading could be increased up to 12.5 weight% Mo without loss of intrinsic activity per Mo atom.

ACCESSION NUMBER: 1995:517893 CAPLUS
 DOCUMENT NUMBER: 122:269661
 TITLE: Preparation of high surface area Mo/ZrO₂ catalysts by a molten salt method: application to hydrodesulfurization
 AUTHOR(S): Afanasiev, Pavel; Geantet, Christophe; Breyse, Michele
 CORPORATE SOURCE: Inst. de Recherches sur la Catalyse, Villeurbanne, 69626, Fr.
 SOURCE: Journal of Catalysis (1995), 153(1), 17-24
 CODEN: JCTLA5; ISSN: 0021-9517
 PUBLISHER: Academic
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L9 ANSWER 23 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Monoclinic ZrO₂ and its supported materials Co/Ni/ZrO₂ (Co:Ni = 1:1) for catalytic decomposition of N₂O have been studied with GC, FTIR, EDAX, XPS, to evaluate catalytic activity of the materials. The monoclinic ZrO₂ alone has the catalytic effect for N₂O decomposition, although higher activities are found for Co/Ni/ZrO₂ systems. XPS study shows that only Co exists in the surface region of ZrO₂, which is attributed to the formation of NiO-ZrO₂ solid solution resulting from an interdiffusion between Ni²⁺ and ZrO₂ matrix. The gas decomposition on Co/Ni/ZrO₂ can be described as first order with respect to partial pressure of N₂O. Surface reactions on ZrO₂ and Co/Ni/ZrO₂ will also be addressed.

ACCESSION NUMBER: 1995:418130 CAPLUS
 DOCUMENT NUMBER: 122:221420
 TITLE: Monoclinic ZrO₂ and its supported materials Co/Ni/ZrO₂ for N₂O decomposition
 AUTHOR(S): Zeng, H. C.; Lin, J.; Teo, W. K.; Wu, J. C.; Tan, K. L.
 CORPORATE SOURCE: Fac. Eng., Natl. Univ. Singapore, Singapore, 05111, Japan
 SOURCE: Journal of Materials Research (1995), 10(3), 545-52
 CODEN: JMRREE; ISSN: 0884-2914
 PUBLISHER: Materials Research Society
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L9 ANSWER 22 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB A catalyst composition comprises predominantly tetragonal zirconium oxide on a neutral support. A process for converting α,β -olefinically unsatd. aldehydic or ketonic compds. into the corresponding allylic alc. derivs. using an alc. as a hydrogen donor in the presence of the catalyst on a neutral support with the catalyst selected from HfO₂, V₂O₅, Nb₂O₅, TiO₂, Ta₂O₅ or their mixts. is also claimed. Acrolein was converted in 94-99% to allyl alc. with efficiencies of 84-95% using ZrO₂ on silica. The catalyst can be regenerated by heating in an O-containing atmospheric

ACCESSION NUMBER: 1995:426558 CAPLUS
 DOCUMENT NUMBER: 122:164051
 TITLE: Zirconium dioxide catalyst and process for the reduction of carbonyl compounds to alcohols
 INVENTOR(S): Reichle, Walter Thomas
 PATENT ASSIGNEE(S): Union Carbide Chemicals and plastics Technology Corporation, USA
 SOURCE: Eur. Pat. Appl., 11 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 607591	A2	19940727	EP 1993-120522	19931220
EP 607591	A3	19941102		
EP 607591	B1	19990929		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
US 5354915	A	19941011	US 1992-994630	19921221
JP 06226093	A2	19940816	JP 1993-344464	19931220
JP 2864089	B2	19990303		
AT 185091	E	19991015	AT 1993-120522	19931220
ES 2136110	T3	19991116	ES 1993-120522	19931220
PRIORITY APPLN. INFO.:			US 1992-994630	A 19921221
OTHER SOURCE(S):		MARPAT 122:164051		

L9 ANSWER 24 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Temperature-programmed reduction in a H₂/Ar mixture of Rh-loaded CeO₂-ZrO₂ solid solns. with a ZrO₂ content varying between 10 and 90% mol and of monoclinic, tetragonal, and cubic structures is reported. It is shown that incorporation of ZrO₂ into a solid solution with CeO₂ strongly promotes bulk reduction of the Rh-loaded solid solns. in comparison to a Rh/CeO₂ sample. The promotion of the bulk reduction results in high oxygen storage capacity (OSC) as measured by oxygen uptake. A structural dependence of both reduction and oxidation processes is observed which is attributed to a higher oxygen mobility in the cubic structure compared to the tetragonal and monoclinic ones.

ACCESSION NUMBER: 1995:281518 CAPLUS
 DOCUMENT NUMBER: 122:141095
 TITLE: Rh-loaded CeO₂-ZrO₂ solid solutions as highly efficient oxygen exchangers: dependence of the reduction behavior and the oxygen storage capacity on the structural properties
 AUTHOR(S): Fornaziero, P.; Di Monte, R.; Rao, G. Rangai; Kaspar, J.; Meriani, S.; Trovarelli, A.; Graziani, M.
 CORPORATE SOURCE: Dip. Sci. Chimiche, Univ. Trieste, Trieste, 34127, Italy
 SOURCE: Journal of Catalysis (1995), 151(1), 168-77
 CODEN: JCTLA5; ISSN: 0021-9517
 PUBLISHER: Academic
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L9 ANSWER 25 OF 41 CAPLUS COPYRIGHT 2005 ACS ON STN
 AB Thermally prepared mixed-oxide IrO₂/ZrO₂ films were studied by Rutherford backscattering spectrometry (RBS), wide-angle x-ray scattering (WAXS) and cyclic voltammetry. Concentration depth profiling by RBS has shown that electrode films containing <50 mol.% of IrO₂ have layered structures where noble metal oxide and ZrO₂ enrichments alternate. The outermost layer is enriched with IrO₂. By WAXS anal. it was possible to prove the existence of an IrO₂ and a ZrO₂ phase. From cell parameters, very limited solubility could be ascertained, restricted at the 2 limits of the composition coordinate.
 In the range 0-20 mol.% of IrO₂, a tetragonal ZrO₂ phase is formed. For samples richer in IrO₂, the ZrO₂ phase becomes amorphous. The microstructural features of the tetragonal IrO₂-rich phase do not change significantly with the film composition. The effective surface area of the samples, as determined by cyclic voltammetry, exhibits a maximum in the composition range 50-80 mol.% IrO₂. This result was interpreted on the basis of WAXS and RBS data.
 ACCESSION NUMBER: 1994:666365 CAPLUS
 DOCUMENT NUMBER: 121:266365
 TITLE: Physicochemical properties of thermally prepared Ti-supported IrO₂/ZrO₂ electrocatalysts
 AUTHOR(S): Benedetti, A.; Riello, P.; Battaglin, G.; De Battisti, A.; Barbieri, A.
 CORPORATE SOURCE: Dipartimento di Chimica Fisica dell'Universita, Calle Larga S. Marta 2137, Venezia, 30123, Italy
 SOURCE: Journal of Electroanalytical Chemistry (1994), 376(1-2), 195-202
 CODEN: JECHES; ISSN: 0368-1874
 PUBLISHER: Elsevier
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L9 ANSWER 26 OF 41 CAPLUS COPYRIGHT 2005 ACS ON STN
 AB The thermal decomposition of trans-1,4,5,8-tetranitroso-1,4,5,8-tetraazadecalin (TNSTAD), a polycyclic polynitrosamine, has been studied with regard to the kinetics, mechanism, morphol. and the gaseous products thereof, using thermogravimetry (TG), DTA, IR spectroscopy, differential scanning calorimetry (DSC), X-ray diffraction (XRD) and hot-stage microscopy. The crystal structure parameters obtained from the XRD pattern are a = 10.785±0.005 Å, b = 10.785±0.005 Å, c = 18.525±0.004 Å; c/a ratio = 1.718. The crystal belongs to the tetragonal system. IR spectra of TNSTAD have also been recorded and the bands assigned. The kinetics of thermolysis has been followed by both isothermal TG and IR. The best linearity (with a correlation coefficient of 0.996) was obtained for the Jander's equation for the range 0-53% in isothermal TG. The activation energy was found to be 195.38 kJ mol⁻¹ and log(A in s⁻¹) was 18.21. The effect of a series of additives (incorporated to the extent of 5%) on the initial thermolysis of TNSTAD has also been studied. Evolved gas anal. by IR showed that HCHO, NO₂, NO and N₂O are produced in larger amounts than CO₂ and HCN. The cleavage of the N-N bond appears to be the primary step in the thermolysis of TNSTAD.
 ACCESSION NUMBER: 1994:54056 CAPLUS
 DOCUMENT NUMBER: 120:54056
 TITLE: XRD, spectroscopic and thermal analysis studies on trans-1,4,5,8-tetranitrosotetraazadecalin (TNSTAD)
 AUTHOR(S): Prabhakaran, K. V.; Bhide, N. M.; Kurian, E. M.
 CORPORATE SOURCE: Armament Research and Development Establishment, Pashan, Pune-411021, India
 SOURCE: Thermochimica Acta (1993), 220(1-2), 169-83
 CODEN: THACAS; ISSN: 0040-6031
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L9 ANSWER 27 OF 41 CAPLUS COPYRIGHT 2005 ACS ON STN
 AB Using XRD, cubic crystals CaxZr_{1-x}O₂-x(CaF₂ structure) exist in the fused Fe catalysts containing ZrO₂ and a small amount of CaO. Fe²⁺ could enter monoclinic ZrO₂ lattices to convert it into cubic ZrO₂(Fe_{0.5}Zr_{0.5}O₂-x), which in turn causes a small portion of Fe₃O₄ to be broken down to form Fe₂O₃(10R). SEM observation of the catalyst surface indicates that CaxZr_{1-x}O₂-x separates out of the α-Fe lattice and is concentrated in the cracks or channels of the reduced catalyst, while in the unreduced catalyst, CaxZr_{1-x}O₂-x has a relatively uniform dispersion. For the catalyst without CaO, however, ZrO₂ exhibits an even distribution on the surface of both reduced and unreduced catalysts. The results of the sp. surface area measurement shows that the BET surface area of the catalyst decreases somewhat as the content of ZrO₂ increases. By the thermoanal. technique (TG), further ZrO₂ promotes the reduction of the fused Fe catalyst. If ZrO₂ and CaO are added together to the catalyst the reduction behavior of the catalyst is greatly improved.
 ACCESSION NUMBER: 1994:39280 CAPLUS
 DOCUMENT NUMBER: 120:39280
 TITLE: Study on the internal action and existence state of zirconium dioxide in fused iron catalysts of different compositions
 AUTHOR(S): Wang, Wenxiang; Liu, Zheng; Fan, Li
 CORPORATE SOURCE: Dep. Chem., Zhengzhou Univ., Zhengzhou, Peop. Rep. China
 SOURCE: Journal of Solid State Chemistry (1993), 107(1), 201-10
 CODEN: JSSCBI; ISSN: 0022-4596
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L9 ANSWER 28 OF 41 CAPLUS COPYRIGHT 2005 ACS ON STN
 AB Pd/ZrO₂ catalysts highly active for the oxidation of CO can be prepared by exposing amorphous Pd-Zr alloys to CO oxidation conditions at 280°. The bulk chemical and structural changes occurring under these conditions were studied using thermoanal. methods (TG, DTA) combined with mass spectrometry and in-situ powder XRD. Amorphous PdZr₂ and PdZr₃ alloys exhibit virtually no activity when exposed to CO oxidation conditions, mainly due to their low sp. surface area (.apprx.0.01 mg₂/g). The activity develops with time on stream, passes through a maximum and reaches a stable state only after several hours. The maximum in the activity is observed when .apprx.50-70% of the amount of O necessary for complete oxidation of the precursor to PdO and ZrO₂ was consumed. The oxidation of the amorphous Pd-Zr alloys, which results in a drastic increase of the sp. surface area of the samples, starts at significantly lower temperature than the crystallization temps. of the alloys. The stable catalysts contain poorly crystalline monoclinic and tetragonal ZrO₂, metallic Pd and PdO as bulk phases. The concentration of these phases is influenced by simultaneously occurring reactions, including: the oxidation of the alloy constituents by O₂ which results in PdO and ZrO₂, the oxidation by CO₂ resulting in Pd and ZrO₂, and the reduction of the PdO formed by CO and by metallic Zr present in the unreacted part of the alloy. The solid state reduction 2 PdO + Zr → Pd + ZrO₂ contributes significantly to the reduction of the PdO as long as metallic Zr is abundant in the alloys.
 ACCESSION NUMBER: 1993:547377 CAPLUS
 DOCUMENT NUMBER: 119:147377
 TITLE: Transformation of glassy palladium-zirconium alloys to highly active carbon monoxide-oxidation catalysts during in situ activation studied by thermoanalytical methods and x-ray diffraction
 AUTHOR(S): Baiker, A.; Maciejewski, M.; Tagliaferri, S.
 CORPORATE SOURCE: Dep. Chem. Eng. Ind. Chem., Eidg. Tech. Hochschule, Zurich, CH-8092, Switz.
 SOURCE: Berichte der Bunsen-Gesellschaft (1993), 97(3), 286-92
 CODEN: BBFCAX; ISSN: 0005-9021
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L9 ANSWER 29 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Ordinary and low-frequency Raman spectra were used to study Li aluminosilicate glasses with added ZrO₂ as a crystallization catalyst in various stages of secondary heat treatment. Evidence was found for phase separation of the glasses with formation of ultrafine particles of tetragonal ZrO₂, and the size of the particles was determined. The matrix crystallized around the ZrO₂ particles. The structure of the residual glass phase in the resulting glass-ceramics is discussed. The obtained results are compared with data obtained by x-ray methods.
 ACCESSION NUMBER: 1993:43952 CAPLUS
 DOCUMENT NUMBER: 118:43952
 TITLE: Raman-spectra evidence of phase separation in lithium aluminosilicate glasses containing zirconium dioxide
 AUTHOR(S): Bobovich, Ya. S.; Zhilin, A. A.; Petrov, V. I.; Tsenter, M. Ya.; Churvaeva, T. I.
 CORPORATE SOURCE: Gos. Opt. Inst. im. S. I. Vavilova, St. Petersburg, Russia
 SOURCE: Optika i Spektroskopiya (1992), 72(6), 1356-62
 CODEN: OPSPAM; ISSN: 0030-4034
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L9 ANSWER 30 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB The ZrO₂ catalyst supports modified with rare earth elements were prepared by copptn. from an aqueous solution of zirconium oxychloride and rare earth chlorides. The crystallization of amorphous hydrous ZrO₂ was inhibited by doping with rare earths; the crystallization temperature was elevated as the amount and ionic radius of the rare earth modifiers was increased. Only modification using Ce had no effect on the crystallization process. The behavior of Ce was different from that of other rare earth elements with valency 3+. A metastable cubic phase was formed for ZrO₂ modified with 10 mol.% La, Nd, and Sn by heating at 600°. X-ray diffraction and Raman data indicated that the metastable phase had large microstrain and short-range ordering similar to tetragonal symmetry. Rare earth-modified ZrO₂ showed a large surface area and good thermal stability as a catalyst support. The CO oxidation activity of Fe was enhanced by modification with Nd of ZrO₂ supports.
 ACCESSION NUMBER: 1991:590746 CAPLUS
 DOCUMENT NUMBER: 115:190746
 TITLE: Preparation and characterization of zirconium dioxide catalyst supports modified with rare earth elements
 AUTHOR(S): Ozawa, Masakuni; Kimura, Maseo
 CORPORATE SOURCE: Toyota Cent. Res. Dev. Lab., Inc., Nagakute, 480-11, Japan
 SOURCE: Journal of the Less-Common Metals (1991), 171(2), 195-212
 CODEN: JCOMAH; ISSN: 0022-5088
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L9 ANSWER 31 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB The activity of monoclinic ZrO₂ (baddeleyite) in ammonolysis of o-xylene (I) at 360° was an order of magnitude higher than the activity of tetragonal ZrO₂ (ruffite). Ammonolysis of I in the presence of baddeleyite yielded 28% o-tolynitrile and 12% benzonitrile, whereas in the presence of ruffite phthalimide was formed with 35% selectivity and 40% of I was oxidized to CO and CO₂.
 ACCESSION NUMBER: 1990:461701 CAPLUS
 DOCUMENT NUMBER: 113:61701
 TITLE: Oxidative ammonolysis of o-xylene on zirconium dioxide
 AUTHOR(S): Chukhno, N. I.; Ivanovskaya, F. A.; Sembaev, D. Kh.
 CORPORATE SOURCE: Inst. Khim. Nauk, Alma-Ata, USSR
 SOURCE: Izvestiya Akademii Nauk Kazakhskoi SSR, Seriya Khimicheskaya (1990), (3), 55-6
 CODEN: IKAKAK; ISSN: 0002-3205
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

L9 ANSWER 32 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB A SO₃-promoted ZrO₂/SiO₂ catalyst is a solid superacid with acid strength H₀ > -13.16, regardless of the amount of ZrO₂ loaded. The sample with the highest ZrO₂ loading of 3.5 mmol g⁻¹ showed the highest acid strength of H₀ < -14.52. A tetragonal form of ZrO₂ grew extensively with the greater ZrO₂ loadings. The higher acid strength is attributed to the crystal growth of supported oxide.
 ACCESSION NUMBER: 1989:64355 CAPLUS
 DOCUMENT NUMBER: 110:64355
 TITLE: Acid property of sulfur-promoted zirconium oxide on silica as solid superacid
 AUTHOR(S): Ishida, Toshio; Yamaguchi, Tsutomu; Tanabe, Koza
 CORPORATE SOURCE: Fac. Sci., Hokkaido Univ., Sapporo, 060, Japan
 SOURCE: Chemistry Letters (1988), (11), 1869-72
 CODEN: CMLTAG; ISSN: 0366-7022
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L9 ANSWER 33 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB LaCoO3 and La0.8Sr0.2CoO3 highly dispersed on ZrO2 were prepared by impregnating ZrO2 with aqueous solns. of the mixts. of La, Sr, and Co acetates. The high dispersion was confirmed by IR, XRD, TEM, adsorption of NO and XPS. The intensity of IR band of adsorbed pyridine at 1446 cm-1 (coordinated with Zr4+) decreased with the increase in the amount of LaCoO3 loaded and the band almost disappeared at about monolayer coverage. This showed that the surface of ZrO2 was covered by mixed oxides having a perovskite composition. Up to about monolayer coverage, no phases other than monoclinic ZrO2 were detected by XRD and no segregated particles of perovskite by TEM measurements. The variation of the XPS band intensities with the amount of the perovskite loaded was well explained by assuming the high dispersion of the perovskite. The catalysts thus prepared showed very high catalytic activities for the complete oxidation of propane.

ACCESSION NUMBER: 1989:59859 CAPLUS
 DOCUMENT NUMBER: 110:59859
 TITLE: Synthesis and catalytic properties of thin films of perovskite-type mixed oxides
 AUTHOR(S): Mizuno, Noritaka; Fujii, Hiroaki; Misono, Makoto
 CORPORATE SOURCE: Fac. Eng., Univ. Tokyo, Tokyo, 113, Japan
 SOURCE: Shokubai (1988), 30(6), 392-5
 CODEN: SHKUAJ; ISSN: 0559-8958
 DOCUMENT TYPE: Journal
 LANGUAGE: Japanese

L9 ANSWER 34 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB The formation of cubic ZnO2 stabilized with Ni(II) was studied and the structural properties of the catalyst were related with its stability in reducing atmospheres. These properties were then compared to those of catalysts prepared by incipient wetness. Changes in the structure of ZrO2 and in the temps. at which reduction of Ni(II) to Ni metal occurred were then related to the relative strengths of the catalyst-support interaction.

ACCESSION NUMBER: 1988:174224 CAPLUS
 DOCUMENT NUMBER: 108:174224
 TITLE: Preparation and properties of cubic zirconia stabilized with nickel(II)
 AUTHOR(S): Smith, K. E.; Kershaw, R.; Dwight, K.; Wold, A.
 CORPORATE SOURCE: Dep. Chem., Brown Univ., Providence, RI, USA
 SOURCE: Report (1987), TR-5; Order No. AD-A180314, 10 pp.
 Avail.: NTIS
 From: Gov. Rep. Announce. Index (U. S.) 1987, 87(17), Abstr. No. 737,007
 Report
 LANGUAGE: English

L9 ANSWER 35 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB The title support for catalysts contains Zr 50-99.9 and z1 rare earth element 0.1-50% in atomic ratio. The support is prepared by mixing an alkali and a solution containing Zr and a rare earth element, washing the resulting copptd. powder, and then baking. A solution containing ZrOCl2.8H2O and NdCl3.nH2O [Zr/Nd (atomic ratio) 95:5] was neutralized with aqueous NH3 to obtain a copptd. powder, which was baked at 600° to obtain a support with a sp. surface area (s) 60.5 m2/g and tetragonal ratio (r) 86 volume%, vs. 45.6 m2/g and 41 volume%, resp., without the Nd. The support was further baked at 1000°, showing a 20.8 m2/g and r 86 volume%, vs. 5.5 m2/g and 2 volume%, resp., without the Nd.

ACCESSION NUMBER: 1988:44582 CAPLUS
 DOCUMENT NUMBER: 108:44582
 TITLE: Zirconia catalyst support with heat resistance and high specific surface area and its preparation
 INVENTOR(S): Ozawa, Masakuni; Kimura, Mareo; Hasegawa, Hideo
 PATENT ASSIGNEE(S): Toyota Central Research and Development Laboratories, Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JIJOXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 62168544	A2	19870724	JP 1986-9424	19860120
JP 06004133	B4	19940119		

PRIORITY APPLN. INFO.: JP 1986-9424 19860120

L9 ANSWER 36 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB The textural stabilization of non-porous ZrO2 was obtained by addition of La2O3 or Y2O3. The improved stability of the promoted ZrO2 is due to the structural stabilization of the tetragonal form of ZrO2.

ACCESSION NUMBER: 1987:163128 CAPLUS
 DOCUMENT NUMBER: 106:163128
 TITLE: Nonporous stabilized zirconia particles as support for catalysts
 AUTHOR(S): Turlier, P.; Dalmon, J. A.; Martin, G. A.; Vergnon, P.
 CORPORATE SOURCE: Inst. Rech. Catalyse, Univ. Claude Bernard, Villeurbanne, 69626, Fr.
 SOURCE: Applied Catalysis (1987), 29(2), 305-10
 CODEN: APCADI; ISSN: 0166-9834
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L9 ANSWER 37 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Metal-support interactions are proposed to explain a much lower chemisorption of H on Rh/ZrO₂ compared to Rh/Y-Al₂O₃ catalysts. The decrease in H chemisorption, while retaining the ability to chemisorb O, is a characteristic of strong metal-support interactions. Well dispersed samples of Rh₂O₃ on ZrO₂ were prepared and the structural properties of the catalysts were related to their stability in reducing atmospheres. Changes in the structure of the phases formed and the temps. at which reduction to Rh metal occurred were then related to the relative strengths of the catalyst-support interactions. A comparison of the stability towards reduction of the bulk and dispersed Rh₂O₃ demonstrates the influence of an interaction between the dispersed metal oxide and the support.

ACCESSION NUMBER: 1987:39138 CAPLUS
 DOCUMENT NUMBER: 106:39138
 TITLE: Preparation and characterization of dispersed rhodium oxide on tetragonal zirconium oxide
 AUTHOR(S): Zhang, Y. C.; Dwight, K.; Wold, Aaron
 CORPORATE SOURCE: Dep. Chem., Brown Univ., Providence, RI, USA
 SOURCE: Report (1986), TR-39; Order No. AD-A166345/9/GAR, 8 pp. Avail.: NTIS
 From: Gov. Rep. Announce. Index (U. S.) 1986, 86(15), Abstr. No. 633,336
 DOCUMENT TYPE: Report
 LANGUAGE: English

L9 ANSWER 38 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB Samples of well dispersed hexagonal Rh₂O₃ on tetragonal ZrO₂ were prepared by the codecompn. of the nitrates at 900°. A comparison of the stability towards reduction of the bulk and dispersed Rh₂O₃ products demonstrates the influence of an interaction between the dispersed metal oxide and the support.

ACCESSION NUMBER: 1986:540572 CAPLUS
 DOCUMENT NUMBER: 105:140572
 TITLE: Preparation and characterization of dispersed rhodium oxide (Rh₂O₃) on tetragonal zirconium dioxide
 AUTHOR(S): Zhang, Y. C.; Dwight, K.; Wold, A.
 CORPORATE SOURCE: Chem. Dep., Brown Univ., Providence, RI, 02912, USA
 SOURCE: Materials Research Bulletin (1986), 21(7), 853-8
 CODEN: MRBUAC; ISSN: 0025-5408
 DOCUMENT TYPE: Journal
 LANGUAGE: English

L9 ANSWER 39 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB NdFO, CeFO, Nd_{0.5}Ce_{0.5}FO, Nd_{0.5}Y_{0.5}FO, (NdFO)_{0.9}(Nb₂O₅)_{0.1}, (ZrO₂)_{0.7}(NdF₃)_{0.3}, and (ZrO₂)_{0.7}(SmF₃)_{0.3} were obtained by high-temperature reactions between rare earth fluorides and rare-earth or Zr oxides. The formation of Nd fluoride oxides and their properties as an electrocatalyst and/or a fuel-cell solid electrolyte were studied by x-ray diffraction and electrochem. methods. An equimolar mixture of NdF₃ and Nd₂O₃ reacted quant. at >1100° in Ar to give NdFO. The crystal structure of NdFO was affected by the reaction temperature and the cooling procedure. The different crystal phases and their transformations were studied. The cubic NdFO, with a fluorite type structure, was electrocatalytically active for both the H oxidation and O reduction. The cubic phase compound (NdFO)_{0.9}(Nb₂O₅)_{0.1}, obtained by the addition of Nb₂O₅ to the cubic NdFO at 1250°, had a higher catalytic activity and the O-ion conductivity than NdFO or the stabilized ZrO₂.

ACCESSION NUMBER: 1983:57142 CAPLUS
 DOCUMENT NUMBER: 98:57142
 TITLE: Preparation and physical properties of rare earth fluoride oxides. 1. Preparation of neodymium fluoride oxides and application to electrocatalysts or solid electrolytes
 AUTHOR(S): Takashima, Masayuki; Kanoh, Gentaro; Konishi, Hajime
 CORPORATE SOURCE: Fac. Eng., Fukui Univ., Fukui, 910, Japan
 SOURCE: Nippon Kagaku Kaishi (1982), (12), 1996-902
 CODEN: NKAKB8; ISSN: 0369-4577
 DOCUMENT TYPE: Journal
 LANGUAGE: Japanese

L9 ANSWER 40 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB The rate of the reaction between ZrO₂ and Nd₂O₃ at 1200-1500° decreases with increased percent content of Nd₂O₃. The rate consts. at various temps. as a function of the composition of the starting mixture are given. The interaction between Nd₂O₃ and ZrO₂ (free of HfO₂) proceeds with a higher activation energy than when a slight HfO₂ impurity is present. For mixts. of the composition Nd₂O₃ + 2ZrO₂, the final product is the compound Nd₂Zr₂O₇ with a pyrochlore structure and the lattice parameter 10.64 Å. Its quantity increases with increased temperature and firing time. An intermediate product for this mixture is the cubic solid solution with the lattice parameter 10.42 Å. When the mixture is calcined at 1500° for 8 hr the intermediate solid solution disappears completely. Unilateral diffusion of Nd₂O₃ into ZrO₂ is indicated. The principal product is the cubic solid solution of composition Zr_{0.67}Nd_{0.33}O_{1.84}.

ACCESSION NUMBER: 1972:77086 CAPLUS
 DOCUMENT NUMBER: 76:77086
 TITLE: Formation of solid solutions and compounds in the neodymium sesquioxide-zirconium dioxide system
 AUTHOR(S): Krzhizhanovskaya, V. A.; Gulshkova, V. B.
 CORPORATE SOURCE: Inst. Khim. Silik. Im. Grebenshchikova, Leningrad, USSR
 SOURCE: Izvestiya Akademii Nauk SSSR, Neorganicheskie Materialy (1972), 8(1), 127-32
 CODEN: IYNMAW; ISSN: 0002-337X
 DOCUMENT TYPE: Journal
 LANGUAGE: Russian

19 ANSWER 41 OF 41 CAPLUS COPYRIGHT 2005 ACS on STN
 AB ZrO2 exists in amorphous, tetragonal, and monoclinic
 forms, and all can be converted to the monoclinic form by
 heating above 600°. The presence of Si or Fe in various forms
 presents obstacles to production of the monoclinic form, which
 is used as a high-grade white opacifier in ceramic glaze or in paints.
 When heated with Si, the formation of slag causes difficulty in
 pulverization and resultant poor color from abrasion of the pulverizer.
 When Fe is present, obnoxious yellow colors result. This is prevented by
 using 0.25-5.0% Li2O (as Li2O or other Li compds. which decompose on heating
 to Li2O) as a catalyst. Heating is from 600° to
 950° until the entire mass is converted to monoclinic
 form, which is best determined by x-ray diffraction. This can be
 accomplished
 by rotary, muffle, or Wedge furnace. The converted ZrO2 is pulverized to
 a fineness of less than 0.5% retained on a 325-mesh screen.
 ACCESSION NUMBER: 1949:7413 CAPLUS
 DOCUMENT NUMBER: 43:7413
 ORIGINAL REFERENCE NO.: 43:1580a-c
 TITLE: Zirconia opacifiers
 INVENTOR(S): Hurd, Loren C.; Weyden, Allen J. Vander; Stroupe,
 James D.
 PATENT ASSIGNEE(S): Rohm & Haas Co.
 DOCUMENT TYPE: Patent
 LANGUAGE: Unavailable
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2455123		19481130	US	

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COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

131.24

131.45

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)

SINCE FILE

TOTAL

ENTRY

SESSION

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